"Churn Rate and CLV Forecasting: A Survival Analysis Approach"

11.10.2023

Problem Definition Document

Project Team:
      Ela Khachatryan: Project manager
      Anna Manasyan: DB Developer
      Anna Shaljyan: API Developer
      Sergey Tovmasyan: Data Analyst

Instructor:
      Karen Hovhannisyan

Teaching Assistant (TA):
      Garo Bozadjian

Problem Statement:

In the modern business landscape, companies across diverse sectors struggle with shared challenges. These include customer churn, revenue instability, resource allocation complexities, pricing optimization, and the imperative for personalized customer experiences. Customer churn, signifying the loss of clientele over time, threatens the business's continuity. Revenue volatility, shaped by dynamic markets and shifting consumer behaviors, introduces financial uncertainties. Personalizing customer experiences has become a fundamental requirement, necessitating a deep understanding of individual preferences and behaviors. These are just a few examples of the many challenges companies face in today's business world, so innovative solutions to address these pressing issues are needed.

Understanding customer behavior, reducing churn, and maximizing the lifetime value of customers may affect these problems in a positive way. Our project aims to build a comprehensive model that conducts survival analysis for companies, predicts churn rates, and estimates customer lifetime value (CLV).

Users of the project:

The target audience for this project includes a wide range of businesses, such as subscription services, e-commerce, finance, banking, insurance, and more, looking to analyze customer behavior and make data-driven decisions. These businesses seek a solution to understand and mitigate churn, improve revenue stability, allocate resources optimally, and enhance customer personalization.

Objectives and Outcomes:

The primary objective of our project is to create an easy-to-use package that provides highly accurate predictions for companies. By leveraging survival analysis, churn rate prediction, and CLV estimation, this package will empower businesses to make informed, profitable, and data-driven decisions. The predictions generated will offer insights into the company's future performance, enabling businesses to plan for the short-term and long-term with confidence.

Constraints/limitations:

Selection Bias: Our team will be aware of potential selection bias in the data and take measures to address it.

Software Development Challenges: Our project will tackle software development challenges, including package building and API development, to create a user-friendly and accessible solution.

Data and Features:

The project will utilize specific data suitable for survival analysis. Feature selection and the choice of a suitable algorithms will be key considerations in our analysis.

Solution:

The project's solution will involve the development of an integrated package that conducts survival analysis, predicts churn rates, and estimates CLV. This package will provide businesses with the insights needed to understand where their company will be in the future, enabling them to make the best and most profitable data-driven decisions. To facilitate the storage of appropriate data and ensure easy accessibility, the project will integrate databases for data storage. Additionally, API endpoints will be implemented to streamline usage, allowing businesses to seamlessly integrate the package into their workflows.

The package will be designed for ease of use and will address the complex challenges related to customer behavior and decision-making.

By addressing these challenges and providing a robust predictive solution, this project aims to empower businesses from various sectors to proactively manage customer retention, revenue, resource allocation, and pricing strategies while improving the overall customer experience.